Space Weather Forecast

Issued on Sunday, 19 May 2024 at 00:26 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

---

Space Weather Forecast Headline: Further Moderate-class flares likely with a slight chance of isolated Strong flares throughout. A chance of G1-G2 (Minor/Moderate) Storm conditions likely day 2 and 3 (20 and 21 May) with potential glancing CME impacts.
Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity was at Low levels. There are currently nine sunspots on the visible disc. There has been little change overall since the last summary, with the visible sunspots only slowly evolving. The largest region on the disc is AR3685 in the southeast. The region is composed of a number of large, mature spots. AR3679 near centre-disc is the next largest region and has been the source of some Common class activity. AR3683 in the southwest indicates modest magnetic complexity with numerous small spots at this time. The other sunspot regions are generally smaller, simpler and more stable.

No Earth directed Coronal Mass Ejections (CMEs) observed in available imagery, although we await imagery for a large filament (arc of plasma) liftoff from the southern hemisphere that began around 18/2200UTC.

Solar Wind / Geomagnetic Activity: Solar winds were indicative of waning CME effects, with initially slightly elevated winds around 450km/s steadily decreasing through the period to background levels around 390km/s. The Interplanetary Magnetic Field (IMF), Bt, was initially moderate but steadily reduced to weak levels by 18/1200 UTC where it remained. The north-south component Bz was predominantly weakly negative to start the period but increased from 18/1200 UTC to become more generally natural. Geomagnetic activity initially Active (Kp4) fell to Quiet levels (Kp1-2).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained below the S1/Minor Radiation Storm levels on a slow decline, but above normal background levels.

Four-Day Space Weather Forecast Summary
Solar Activity: Continued Low to Moderate activity is expected with a persistent chance of Moderate-class flares and a slight chance of isolated Strong flares. The moderately sized sunspot region in the southeast disc is most likely to be the source of significant flare activity.

Solar Wind / Geomagnetic Activity: There is an unlikely, but slight chance of a glancing impact from a CME early day 1 (19 May). A more notable CME arrival may glance the Earth late day 2 (20 May) or perhaps early day 3 (21 May), resulting from the moderate flare of a region in the southeast disc that occurred late on 17 May.

In the absence of any CME arrivals solar winds are forecast to remain at generally background speeds.

Generally Quiet conditions are expected through the early period, but with a very slight chance

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2024. All Rights Reserved.

of Active to G1/Minor Storm conditions on day 1 (19 May) subject to the unlikely potential for a CME arrival. A more significant glancing CME blow is possible late day 2 (20 May) into day 3 (21 May) with a chance of G1-G2/Minor-Moderate (Kp5-6) intervals and a slight chance of G3/Strong (Kp7) intervals should we see a more significant impact. Activity should then subside towards Quiet to Unsettled levels again by the end of day 4 (22 May).

Energetic Particles / Solar Radiation: Solar radiation is below the S1/Minor Storm threshold, on a declining trend. There is a persistent slight chance of further enhancements should any large flares occur.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2024. All Rights Reserved.

Met Office Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	50	50	10
Strong	G3	No	1	10	10	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	50	50	50	50
Very Active	R3 to R5 X	No	10	10	10	10

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	10	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

© Crown Copyright 2024. All Rights Reserved.